

Marian Olsen
<m.c.olsen@worldnet.att.net>

02/23/2001 03:58 PM

To Sharon Jaffess
cc Vince Pitruzzello
bcc
Subject Comments on Risk Assessment Pathways Analysis Report -
Confidential

1 attachment



parclh.wpd

Hi Sharon,

Attached for your information is a file with my comments on the Pathways Analysis Report for Diamond Alkali. Please give me a call if you have any questions.

Marian

Date: February 21, 2001

Subject: Comments on the Exponent Passaic River Study Area Conceptual Site Model and Exposure Scenarios Prepared for Chemical Land Holdings

To: Sharon Jaffess
RPM for the Diamond Alkali Site

From: Marian Olsen
Technical Support Team - Program Support Branch

As requested, I have reviewed the above mentioned document. Based on this review, I have the following comments.

General Comments

At the meeting with CLH, we discussed the need to clearly define and evaluate the recommendations regarding land use within the area. Based on the review of the document, it is clear that this activity has not occurred. Since this risk assessment is designed to address both current and future risks, it is imperative that the land use be determined to assure that the exposure factors used in the risk assessment are adequately protective based on the current and future land use determinations. Based on our discussions, I was under the impression that there are plans to redevelop the area surrounding the River which may lead to the potential for greater exposures to the populations. The current document fails to reflect adequate consideration of future land use and as currently presented, would underestimate the risks and hazards from exposure to the river.

At the meeting, there were a number of discussions regarding skulling and student clean-ups of the areas surrounding the river. In the current document, there is no indication that any attempts were made to meet with these individuals and discuss their practices. At the current time, it appears that the exposure assumptions are based on professional judgment without adequate consideration of information that can be obtained by calling these groups. It is suggested that we may want to contact these groups to understand their current practices and assure that they are reflected in the exposure assumptions for the site.

The various exposure pathways fail to adequately address cancer risks and non-cancer hazards to children and adolescents. Based on the Agency's policies on protecting children's health, these populations should be evaluated in the risk assessment. Specific recommendations are provided in the document.

Considering the number of chemicals found in the Passaic River that include Toxicity Equivalency Factors it is noted that no discussion of how these will be addressed in the risk assessment is provided. Before the risk assessment is developed, these issues require resolution.

Before the data from the creel survey is used in the assessment, it must be reviewed and approved by EPA. A process for submittal of the document, and evaluation of the data, must be developed. In addition, the draft workplan for the Probabilistic Risk Assessment must also be submitted and reviewed by EPA before this work is started.

Page Specific Comments

Page 1. In addition to RAGS-Part D, the document should list other guidance documents that will be used in the assessment.

Also, on this page, the PRP indicates a plan to submit new site-specific information for inclusion in the risk assessment. A process is necessary for submitting this information to EPA for review, comment and approval before the revised exposure information is included in the draft risk assessment submitted to EPA.

The discussion of the application of the Risk Assessment Guidance for Superfund Volume 3, Part A Process for Conducting a Probabilistic Risk Assessment is premature. The document was peer-reviewed in November, and the Workgroup is currently completing the revisions recommended during the public comment period and from the peer-reviewers. Only once this document is completed would it be appropriate to use this guidance in the risk assessment.

Page 2. The use of the term “likely” is not consistent with EPA Superfund guidance that requires the evaluation of the reasonable maximum exposure and the central tendency or average exposure.

Page 3. What data is being cited to indicate that the surface water and sediment quality have been improving since the 1970's. A citation and information regarding the degree of improvement should be included in the document.

On this page, the discussion of the contamination found within the six mile stretch requires clarification. These studies cover a wide array of chemicals and it is unclear why this information is being presented in this document. The selection of chemicals of concern is conducted as part of the risk assessment following evaluation of the results from the sampling data collected. Is CLH or their contractor planning to use the various studies cited in quantifying risks? This information would be more appropriate as site background information and not in the risk assessment.

Page 5. It is unclear what is meant by the discussion regarding the decrease in species diversity and its impacts on the risk assessment. Is there any plan to use this information in the risk assessment? Again, the goal of the risk assessment is to evaluate cancer risks and non-cancer hazards in the absence of remedial action at the site and under current and future conditions. The information presented here should not impact the risk assessment. The goal of the risk assessment is to assess risks associated with the site and not to evaluate other risk contributors as is suggested by this statement (see Sections 4.1.2 and 4.1.3).

The discussion of the current study-area use on these pages, is incomplete since it fails to address the future land use. As indicated in the NCP, and EPA Risk Assessment Guidance for Superfund, the goal of the assessment is to evaluate risks under both current and future land use. Considering the planned restoration/redevelopment of these areas, discussed later in the document, the documentation is incomplete in addressing future land uses for this property as discussed in the general comments.

Page 6. The discussion of the future land use makes an assumption of no change in the future land use despite published reports regarding redevelopment. It is recommended, as stated earlier, that this section requires updates to reflect the planned future land uses consistent with EPA guidance on conducting Superfund Risk Assessments.

It is unclear from the document under Section 4 how the determinations regarding future land use were incorporated in to the statements regarding the changes in industrial land zoning. As indicated above, this issue needs to be evaluated before the risk assessment is conducted because these assumptions regarding activity patterns may potentially underestimate the risks. I strongly recommend not using professional judgment for determining the future use as is currently presented in the document. A clear statement regarding the land use planning, documents and individuals contacted, and the conclusions regarding future land use should be presented in the Remedial Investigation document to support the exposure assumptions.

Under Section 4.2, it is unclear why a discussion of CSO discharge is presented here and later in the document. Specifically, this is a Superfund Risk Assessment that is designed to be site-specific and the CSO is not, to my knowledge, site related.

Page 7. The logic behind the first statement regarding visitor access is unclear. If people are observed along the shoreline, then there is a possibility that these individuals will visit the shoreline on a frequent/regular basis. Mention is made that "visitors are generally observed to be standing on the shore talking in small groups". Is this the entire universe of activities that have been observed? Have these individuals been interviewed? My concern is that these are current conditions and a full picture of the activities has not been presented to make the determination that these activities will be infrequent and only limited to children and adults. It is recommended that this scenario should include adolescents who would be anticipated to have more frequent contact with the river/shoreline than either adults or children. Further, the assumptions regarding the frequency are not adequate. It is recommended that contact be made with the groups that participate in clean-up/environmental activities along the river to determine a more reasonable maximum exposure. I would expect that the most frequent activities would occur during the summer months and that the rate of exposure may be up to 4 months with lesser exposures during the winter months. The adolescents i.e., teenagers, would have the most frequent exposure while adults and young. Contact with local officials/community groups, is imperative to determine whether the reasonable maximum activities are evaluated in the risk assessment.

Page 8. Since there are various sculling groups within the area, a more appropriate contact would be with the officials of these groups. It is recommended, that these groups be contacted for information regarding the age of the participants, geographic areas covered, frequency of practice, and specific activities during racing. This can be verified by contacting these groups for further information and used to support the exposure assumptions presented later in the document.

I disagree with the conclusion that the sculler is an adult. From my observations of another river, the scullers appear to be more high school and college age children and the risk assessment should evaluate these populations consistent with the Agency's goals/policies of protecting children's health. As indicated later in the document, the population of interest appears to be high school children, and this should be evaluated based on the potential for college age children to also participate, or possibly junior high school students.

The exposure pathways do not seem appropriate. While it is not anticipated that the scullers will fall into the river, the possibility does exist that this will occur. This potential should be evaluated in the risk assessment. Further, it is anticipated that individuals will be exposed to Passaic River surface water through incidental ingestion as well as dermal contact and this should be evaluated in the assessment.

The last sentence for this section, on the top of page 9, is not consistent with the risk assessment process. It sounds as if dermal contact with sediments can occur, and therefore should be evaluated in the risk assessment, especially if the individuals fall into the river while sculling as suggested above.

Page 9. The statements that children and adolescents should not be evaluated in the risk assessment is inconsistent with EPA's Policy on children's health. Further, the peer-review panel for the Hudson River was very specific that children should be evaluated within the risk assessment, especially nursing infants. The risk assessment must include specific calculations of cancer risks and non-cancer hazards to children under the age of 6, adolescents (7 to 18 years old) and adults. In addition, a qualitative assessment of the cancer risks and non-cancer hazards to infants should also be included in the assessment based on the bioaccumulative potential of several of the potential chemicals of concern.

Pages 9 and 10. Based on the current/future land use, the potential exists for a maintenance worker to be responsible for maintaining or cleaning shoreline areas. This receptor should be evaluated based on the potential exposure to the sediments in these areas along with the volatilization of the contaminants. For this worker, exposures to surface water and sediments should be evaluated.

Page 10. Further details regarding the types of construction that are anticipated and the basis for the exposure assumptions should be presented here.

Page 11. Consistent with Superfund risk assessment approaches, assumptions regarding personal protective equipment should not be made in the evaluation of the exposures of the

community volunteer. This is an institutional control and should not be identified as a means of preventing exposure. Evaluation of the risks in the absence of institutional controls would then allow a determination if such controls are necessary. Similarly, the assumptions that an individual will wash their hands before eating may assume a level of protection that is not present.

Another concern is the age of the community volunteer. The document indicates that adults will be exposed. However, there are indications that adolescents are involved in the clean-up of these areas. It is recommended that the community organizations be contacted to determine the age of the volunteer and their practices to support the assumptions used in the exposure assessment.

Page 12. The potential exists for the homeless individual to be exposed to tidal backwash and this should be evaluated in the assessment as an ingestion and dermal exposure route. Further, it is recommended that fish consumption for this population should also be evaluated. Contact with individuals running local homeless shelters, can provide additional information regarding the potential patterns of exposure in these areas.

Page 12. The statements regarding the future revitalization are inconsistent with the assumptions in the exposure assessment. Before making that statement that the future conditions are reflected in the exposure parameters, it is important to clearly define what the future land uses assumptions are. Review of the document indicates that this has not occurred and therefore the basis for the future assumptions can not be determined.

Page 13, Section 4.4.1.1. EPA's 1991 Guidance on calculating the 95% Upper Confidence Limit on the Mean (UCL) clearly indicates that where a 95% UCL can be determined it should be used, however, in the event that the calculated 95% UCL exceeds the mean, then the maximum concentration should be used in the calculation. This statement should be presented in the document.

For the calculation of the CT (average) cancer risks and non-cancer hazards, the same concentration as that used for the RME should be used for the CT so that the calculations reflect an average exposure.

An average body weight for an adolescent should be presented based on the assumed activities for the various exposures.

Page 14. At the time of the risk assessment it is anticipated that the Superfund Dermal Guidance Document will be completed and it is recommended that the values in that document be used in the assessment.

As indicated previously, the assumption of 12 days/year exposure for the visitor is not protective for adolescents who may frequent the area more than adults or young children. To determine a value that is protective, further work is required to determine the future land use, the ages of the individuals exposed, and the frequency. It would seem likely that individuals would be exposed primarily during the 13 weeks of for a total of 13 days/year for young children and adults. For

adolescents (ages 7 to 18), who is not as likely to be accompanied by an adult, it should be assumed the recreational frequency was three fold greater than the adult/young children frequency i.e., 39 days/year. The RME values should be reduced by 50% for the CT exposure.

Page 15. The exposures of the adolescent should be factored into the calculations of the exposure duration, and frequency as described above

Under the future land use, it would seem reasonable that the exposure period would be 2 or 3 hours/day not 1 hour as suggested.

For children and adolescents the mean surface area of hands, forearms, lower legs, feet and face should be calculated by multiplying the total body surface area (averaged between males and females) by the percentage of total body surface area that make up the relevant body parts. For children, the mean surface area for the hands, forearms, lower legs, feet and face is 2,792 cm² (using data for the category 6 to 7 years old); for adolescents, the mean surface area of the hands, forearms, lower legs, feet and face is 4,263 cm² (for 12 years old); for adults, the mean surface area of hands, forearms, lower legs, feet and face is 6,073 cm².

Pages 16-18. The dermal contact with surface water, sediments, and sediment-to-skin adherence rates should be:

- **Permeability Constant.** In the absence of experimental measurements for the dermal permeability constant for PCBs, a value of 0.48 cm/hr based on the value for hexachlorobiphenyls reported in the 1999 Draft Dermal Risk Assessment Guidance should be used. The Dermal Guidance should also be used to determine chemical-specific permeability constants for other constituents.
- **Skin Surface Area Exposed.** As an estimate of possible exposure, 100% of the full-body surface area should be assumed for contact with water. The surface areas for adults, adolescents, and young children should be 18,150 cm², 13,100 cm², and 6,880 cm².
- **Sediment Ingestion Rate.** The rate for ingestion should be 100 mg/day for young children and 50 mg/day for adolescents and adults based on the shorter time frame and individual will spend at the site and the adherence of the material to the skin. The Central Tendency value should be ½ of the RME. No adjustment for Fraction from Affected Source should be applied to these values.
- **Dermal Absorption Fraction.** It was noted in the document that information on the dermal absorption fraction was not presented. It is recommended that chemical specific dermal absorption fractions should be included in the calculations. These values will be available in the new Dermal Guidance.

Page 18. The inhalation rate for adult residents is 20 cubic meters/day which includes both resting and strenuous activities. It is recommended that the daily activities be prorated for an inhalation rate of 0.83 cubic meters/hour. The value for the child appears to be appropriate. The value for the adolescent should be 0.56 cubic meters/day. If the anticipated activities are

more strenuous than the inhalation rate should be increased to reflect these activities.

Page 19-20. The assumptions regarding the rates of sculling on the river appear appropriate based on the exposure frequency. However, these values should be verified by sculling organizations either nationally, or within this geographic area..

The duration of sculling does not appear long enough. Is it possible that these same individuals may continue these activities at a local College? If so, the exposure durations for the RME and CT sculling activities should be doubled.

The exposure time for sculling should be further researched by contacting other schools in the area or national associations.

The sculling activity must evaluate the cancer risks and non-cancer hazards to adolescents with an appropriate change in bodyweight included in the calculation.

The recommended short-term “heavy activities” should be evaluated to determine whether it is also representative of adolescents.

This exposure pathway should also further evaluate the cancer risks and non-cancer hazards to the sculler under the possibility of the individual falling into the river.

Page 22. As indicated earlier, the skin surface area should include the hands, forearms, lower legs, feet and face. The specific values are listed above. In addition, values for adolescents should also be included since many younger children are expected to fish in these waters.

Page 24. EPA has commented on the proposed creel survey and will evaluate CLH's responses to the comments when received.

Pages 25-26. The Creel Survey data should only be used in the risk assessment once EPA has reviewed the data, its application, and the results. The data should not be used in the risk assessment until such time as EPA has agreed with the results from the assessment. The ingestion rates should address ingestion by young children and adolescents consistent with the EPA's policy on protecting children's health.

The inhalation rates should be updated as discussed above.

Page 26. The Industrial Worker Scenario should be modified to include a potential maintenance worker who may be engaged in cleaning the banks of the river either associated with the future land use or through maintaining the banks of the current industrial properties.

The Inhalation Rate from the 1991 Standard Default Exposure Factors should be used in the calculations for the workers.

The exposure pathways should be expanded to include dermal contact and possible ingestion

associated with the maintenance activities.

Page 27. It is recommended that a range of potential construction projects should be identified with associated exposure assumptions. For example, the need may exist for rebuilding bulkheads, new bulkheads, retaining walls, etc. These projects need to be identified and evaluated to determine the most appropriate RME scenario for inclusion in the risk assessment. This is especially important considering the potential re-development of this area. These activities need to be identified before it will be possible to evaluate whether the exposure parameters identified are appropriate for the risk assessment.

The assumption that the workers would only be exposed for 2 hours/day seems low. It is recommended that the standard worker 8 hour day should be used.

Page 28. The assumptions evaluated based on the body part exposed should be expanded to include the face since this may also be exposed during construction.

Page 29-31. The ingestion rate for the adult construction worker should be 480 mg/day and not 50 mg/day identified in the section on incidental sediment ingestion rate. The same value should be used for the RME and CT.

The assumption that the volunteers will only be adults, is inconsistent with the number of organizations that involve adolescents in the process of cleaning up the river. At a minimum adolescents and adults should be evaluated under this scenario.

Since organizations are already involved in clean-up these areas, it is recommended that these groups should be contacted to understand their current activities in the area, the frequency, the ages of the individuals involved, and the areas that are being cleaned-up.

It is a major assumption that the area will be cleaner in the future as outlined in the statement regarding exposure frequency. It is also probable, that by increasing the number of individuals within the area that there may be more trash. In addition, this statement also supports the previous recommendation to evaluate the risks to a maintenance worker who would be involved in removing the trash receptacles, etc. Site specific information should be gathered to determine the exposure frequency and duration.

The skin surface area available for exposure is not large enough. A more realistic scenario would be to include hands, forearms, lower legs, feet and face as described above for both adolescents and adults.

Page 32. See previous recommendations for obtaining additional information on this exposed population.

The inhalation rate for the homeless individual should be 20 cubic meters/day which is consistent with the 1991 Standard Default Assumptions.

Table 4.1. The Adolescent should be included in the pathways evaluated. The cancer risks and non-cancer hazards for the homeless individual should be evaluated based on exposures to the river and not the CSO since it does not appear that this is part of the site in terms of the source.

Tables 4.2 to 4.23 should be modified as described above for the individual exposure pathways and populations.

If you have any questions, please feel free to call me at ext. 4313.

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